

can severely restrict optimal viewing and interpretation of the data.

Accordingly, a need exists for a method for optimal placement of data associated with visualization of massive multi-attribute data in pixel bar charts. A  
5 need also exists for a method for presenting an overview of the data while also presenting the detailed information for each data item. A need also exists for a method for presenting data in a manner for detecting close relationships and trends among the data. A need also exists for a pixel visualization technique that presents data in a categorized manner that is easy to understand.

## SUMMARY OF THE INVENTION

A method for placement of data for visualization of multidimensional data sets using multiple pixel bar charts is presented. Data is received comprising a plurality of records, each record having a plurality of attributes. From the plurality of attributes, a set of attributes is determined for placement of the plurality of records in a graphically displayable array comprising a plurality of data points, each data point representing one record of the plurality of records. In one embodiment, the graphically displayable array is a pixel bar chart. The plurality of records are arranged to construct the pixel bar chart for presenting the data in a format for detecting relationships between the plurality of records. The present invention provides a pixel visualization technique having a method of optimal data placement.

In one embodiment, the plurality of records are sorted by a first dividing attribute corresponding to horizontal axis, and partitioned into groups according to the first dividing attribute. In one embodiment, the plurality of records are then sorted by a second dividing attribute corresponding to vertical axis, and partitioned into sub-groups according to the second dividing attribute. The records of each of each sub-group are then sorted according to a first ordering attribute and a second ordering attribute. A visual indicator (e.g., a color) is then applied to each record according to a visual indicator attribute.

The present invention provides a method of efficient pixel placement for producing dense pixel visualizations that are capable of showing large volumes of multi-dimensional data sets and provides a heuristic placement method to resolve locality and ordering constraints. The present invention allows for the partition of the data set according to the x-axis and y-axis and for placement of pixels of each partition in the corresponding regions according to the x-and y- ordering. As such, the present invention provides a method for generating a pixel bar chart for detecting close relationships and trends among the data that is categorized and easy to understand.